AF/1751

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Patent Application of

Applicants: Bednorz et al.

Serial No.: 08/303,561

Filed: 09/09/94

Date: August 24, 2000

Docket: YO987-074BY

Group Art Unit: 1751

Examiner: M. Kopec

For: New Superconductive Compounds Having High Transition Temperature, and Methods For Their Use and Preparation

Assistant Commissioner for Patents
Washington, D. C. 20231

LETTER

Sir:

Attached is a SUBSTITUTE SUPPLEMENTAL APPELLANT'S REPLY TO THE EXAMINER'S ANSWER, text only, which corrects typographical errors in the SUPPLEMENTAL APPELLANT'S REPLY TO THE EXAMINER'S ANSWER submitted on August 4, 2000. The attachments can be found with the supplemental reply. Attachment A herein contains copies of the title page and table of contents of Ginsburg, D.M., Ed., Physical Properties of High-Temperature Superconductors, Vol. III, World Scientific, Singapore, 1989-1992, which is not included in Attachment E in the Supplemental Reply submitted on August 4, 2000, since it was not available at the time.

Please charge any fee necessary to enter this paper to deposit account 09-0468.

Respectfully submitted,

Daniel P. Morris
Reg. No. 32,053
(914) 945-3217

IBM CORPORATION
Intellectual Property Law Dept.
P.O. Box 218
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Application Number: 08/303,561

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CERTIFICATE OF MAILING UNDER 37 CFR 1.8 (a)

I hereby certify that the attached correspondence comprising:

Letter with Attachment A (3 copies)
Substitute Supplemental Appellant's Reply to Examiner's Answer Text Only (3 copies)
Return Postcard

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Washington, D.C. 20231

on August 24, 2000

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Jennifer A. Smith
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BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Paper No. 93

Application Number: 08/303,561

Filing Date: September 09, 1994

Applicants: Johannes G. Bednorz et al. Examiner M. Kopec

Daniel P. Morris
For Appellant

SUBSTITUTE SUPPLEMENTAL APPELLANT'S REPLY TO THE EXAMINER'S ANSWER TEXT ONLY

In the appellants' reply reference was made to the article "Synthesis of Cuprate Superconductors" by Rao et al., IOP Publishing Ltd. 1993. A copy of this article is in Attachment C to the reply brief. This article lists in Table 1 the properties of 29 cuperate superconductors made according to appellants teaching. Twelve (#'s 1, 8-13, 16, 17, 20, 21, 27 and 28) of those listed do not come within the scope of the claims allowed by the examiner. Only three of the 29 have a $Tc < 26°K$. Those twelve do not contain one or more of a rare earth, a group IIIB element or an alkaline earth element. It is thus clear that broader claims than allowed in the answer should be allowed since it is clear that the allowed claims can be avoided following appellants' teaching without undue experimentation.

The article of Rao et al. in the first sentence of the introduction citing appellants' article - which is incorporated by reference in their application - acknowledges that appellants' initiated the field of high Tc superconductivity. Appellants further note that the Rao article acknowledges that "a large variety of oxides" are prepared by the general principles of ceramic science and that appellants discovered that metal oxides are high Tc superconductors.

Citing reference 5 therein - the book "New Directions in Solid State Chemistry", Rao et al. 1989 (Cambridge; Cambridge University Press) for which there is a 1986 edition which predates appellants filing date Rao (See Attachment B) - Rao et al. states:

> Several methods of synthesis have been employed for preparing cuprates, with the objective of obtaining pure monophasic products with good superconducting characteristics [3, 4]. The most common method of synthesis of cuprate superconductors is the traditional ceramic method which has been employed for the preparation of a large variety of oxide materials [5]. Although the ceramic method has yielded many of the cuprates with satisfactory characteristics, different synthetic strategies have become necessary in order to control factors such as the cation composition, oxygen stoichiometry, cation oxidation states and carrier concentration. Specifically noteworthy amongst these methods are

chemical or solution routes which permit better mixing of the constituent cations in order to reduce the diffusion distance in the solid state [5, 6]. Such methods include coprecipitation, use of precursors, the sol-gel method and the use of alkali fluxes. The combustion method or self-propagating high-temperature synthesis (SHS) has also been employed.

Reference 5 is another example of a reference to the general principles of ceramic science incorporated into appellants' teaching. The Rao et al. article states that the 29 materials reported on in the article and listed in Table 1 are fabricated using the general principles of ceramic science. Moreover, the Rao article states that these materials are fabricated by what the Rao article calls the "ceramic method" which is the preferred embodiment in appellants' specification, yet 12 of the 29 materials in Table 1 do not come within the scope of the claims allowed by the examiner in the answer. Thus known examples fabricated according to appellants' teaching will not be literally infringed by the Rao, Duncombe and Poole examples.

In Attachment A there are copies of the table of contents and Chapter 3 the 1989 edition of reference 5. Chapter 3 is entitled "Preparative Strategies". In Attachment B there are copies of the table of contents and Chapter 3 of the 1986 edition of reference 5. Chapeter 3 in each edition is substantially the same. Since the publication date of the 1986 edition is before appellants filing date, all 29 of the high Tc materials in Table

1 of the Rao article are made according to the general principals of ceramic science as taught by appellants.

Attachment C is a Table of high Tc materials from the "CRC Handbook of Chemistry and Physics" 2000-2001 Edition. Attachment D is a copy of this table with hand written numbers to the left of the materials. There are a total of 42 materials listed in Table 1 (those marked with an asterisk in the table in Attachment D #s 1, 7-13, 16-18, 20, 21, 27, 28, 30, 31 and 41-44) of which 21 do not contain one or more of a rare earth, a group III element or an alkaline earth element. Yet all 42 are made according to the general principals or ceramic science taught by appellants. Two of the 42 materials have a Tc of 25K. Thus a person of skill in the art following appellants' teaching can fabricate materials which do not infringe the claims allowed by the examiner but do not infringe claims not allowed by the examiner.

Table 1 in attachment C list 7 references as the source of the information on the 42 high Tc materials. Those references are listed below. For references 1-5 Attachments E to K, respectively, contain the title page and table of contents of the corresponding book. References 6 and 7 are articles, copies of which are in Attachments J and K respectively.

1. Attachment E
Ginsburg, D.M., Ed., Physical Properties of High-Temperature Superconductors, Vols. I-III, World Scientific, Singapore, 1989-1992.

2. Attachment F
Rao, C.N.R., Ed., Chemistry of High-Temperature Superconductors, World Scientific, Singapore, 1991.

3. Attachment G
Shackelford, J.F., The CRC Materials Science and Engineering Handbook, CRC Press, Boca Raton, 1992, 98-99 and 122-123.

4. Attachment H
Kaldis, E., Ed., Materials and Crystallographic Aspects of HTc-Superconductivity, Kluwer Academic Publ., Dordrecht, The Netherlands, 1992.

5. Attachment I
Malik, S.K. and Shah, S.S., Ed., Physical and Material Properties of High Temperature Superconductors, Nova Science Publ., Commack, N.Y., 1994.

6. Attachment J
Chmaissem, O. et al., Physica C230, 231-238, 1994

7. Attachment K
Antipov E. V. et al., Physica C215, 1-10, 1993, 231-238, 1994

The is no evidence in these references that the 42 high Tc materials of Attachment C cannot be made following appellants' teaching.

Appellants request the Board to reverse the examiners rejections of claims under 35 USC 112, first paragraph.

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Respectfully submitted,

Daniel P. Morris
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ATTACHMENT A

PHYSICAL PROPERTIES OF HIGH TEMPERATURE SUPERCONDUCTORS III

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